

# SIEMENS

PATENT  
Attorney Docket No. 2003P14790WOUS

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE IN RE  
APPLICATION OF:**

Inventor:	S. Haaks et al.	)	Group Art Unit:	2857
		)		
Serial No.:	10/573,674	)	Examiner:	Desta, Elias
		)		
Filed:	10/25/2006	)	Confirmation No.	5072
Title:	<b>METHOD AND DEVICE FOR DETERMINING THE CAUSES OF MALFUNCTIONS AND PERFORMANCE LIMITS IN INSTALLATIONS</b>			

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APPELLANTS' BRIEF UNDER 37 CFR 41.37

Sir:

This brief is in furtherance of the Notice of Appeal filed in this application on March 11, 2008.

1. REAL PARTY IN INTEREST - 37 CFR 41.37(c)(1)(i)

The real party in interest in this Appeal is the assignee of the present application, Siemens Aktiengesellschaft.

2. RELATED APPEALS AND INTERFERENCES - 37 CFR 41.37(c)(1)(ii)

There is no other appeal, interference or judicial proceeding that is related to or that will directly affect, or that will be directly affected by, or that will have a bearing on the Board's decision in this Appeal.

3. STATUS OF CLAIMS - 37 CFR 41.37(c)(1)(iii)

Claims cancelled: 1 - 18.

Claims withdrawn but not cancelled: None.

Claims pending: 19 - 38.

Claims allowed: none.

Claims rejected: 19 - 38.

The claims on appeal are 19 - 38. A copy of the claims on appeal is attached hereto in the Claims Appendix.

4. STATUS OF AMENDMENTS - 37 CFR 41.37(c)(1)(iv)

Subsequent to the Final Rejection, Appellant filed a Response (without amendment) under 37 CFR 1.116 on 8 February 2008 requesting withdrawal of the final rejection and arguing for the allowance of the application. The Examiner considered that paper and issued an Advisory Action mailed 29 February 2008 making of record specific Examiner interpretations and citations in the prior art reference. Appellant continues to disagree with these interpretations and applications of the prior art, and therefore this appeal was undertaken.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER- 37 CFR 41.37(c)(1)(v)

5A. BRIEF BACKGROUND PROVIDING CONTEXT FOR THE SUMMARY OF CLAIMED SUBJECT MATTER

It is known to provide methods and systems for diagnosis of industrial plants in order to identify and correct malfunctions. Partly as a result of increasing complexity in these technical installations, it is difficult to determine the causes of malfunctions and performance limiting

factors, i.e., factors which render sub-optimal the performance of an installation during normal operation. It is also difficult to assess the state of installation components to identify potential problems or the need for improvement measures at such an early stage as to avoid the problem or realize an early benefit resulting from deployment of an improvement measure.

Typically, many efforts to assess conditions and correct installation operations are based on empirical experience of humans having expertise in individual sub-areas of an installation. Generally, known systems and methods have not been adaptable to provide long-term elimination of sundry malfunctions or improvement of the installation. Often, performance limiting and disruptive factors are not consistently identified and addressed early enough to sustain optimal operation of an installation. Consequently the installation may suffer vacillations in performance.

Examples of the claimed invention enable early identification of performance-limiting and disruptive factors in an installation, thereby allowing elimination of malfunctions and overall performance improvements. In the described embodiments, causes relating to malfunctions or limited (i.e., sub-optimal) performance among plural installations are compiled and made available as a broad pool of knowledge for use when analyzing data from an individual technical installation, e.g., to determine causes and remedies relating to malfunctions or limited performance in a target installation. Generally, this requires accumulation of information derived from multiple installations and a set of information relating directly to an installation under investigation. For example, data derived from the installation under investigation may be analyzed based on causation data accumulated in the knowledge pool to generate a series of queries specific to one or more issues identified in the installation under investigation. Based on responses received, the causes of disruptive factors in the installation can be determined.

In an exemplary system, referred to as the device 20, for determining the causes of such disruptive factors (see Figure 2), information about causes of malfunctions in multiple installations can be placed in a first database 21 for access by a data processing unit 23. Data specific to an installation 15 under investigation can be acquired via a first questionnaire 16 and placed in a second database 22 for access by the data processing unit 23. The device 20 includes an input mechanism 25 to receive responses 27 to questions (e.g., provided via a second questionnaire 26) from the employees working in the installation 15. The responses may be provided via a network 30, e.g., by email, or via delivery of completed questionnaires 16. With

these responses the data processing unit 23 can apply one or more rules 44 to determine the causes of disruptive factors of the installation under investigation, i.e., by analyzing the responses of the employees. To assure relevance of the questions provided, the causation data can be assigned to relevant target groups 53, 54, 55 (see also Fig. 3) of employees 29 across the installation as the data is associated with specific installation elements 61, 63, 64, 67. The input data from the installation to be assessed contains data about the relevant target groups to be questioned. Thus a set of questions can be generated which, for example, only contains questions for employees in the relevant target groups.

## 5B. CONCISE EXPLANATION OF SUBJECT MATTER DEFINED IN EACH INDEPENDENT CLAIM

With reference to the detailed description, the following summary references one or more exemplary embodiments described in the Specification and which are covered by specific claims, but it is to be understood that the claims are not so limited in scope.

According to **independent claim 19**, Fig. 2 illustrates a method for determining causes of disruptive factors in an installation 15 under investigation, including

- (i) gathering and storing in a first database 21 relevant causation data of performance limits for a plurality of related installations 40a, 40b, 40c; (See page 4, lines 32-34, page 5 lines 1 - 18 and page 6, lines 26-30. See also Fig. 4.)

- (ii) storing data relating to the installation 15 under investigation in a second database 22; (See page 5, lines 3 - 6 and page 6, lines 32-33.)

- (iii) generating a questionnaire 26 from the causation data by tailoring the questionnaire based on data in the second database 22 so that the questionnaire 26 only contains questions relating to the installation 15 under investigation; (see page 7, lines 4-7.)

- (iv) collecting responses 27 to the questionnaire questions from employees 29 of the installation 15 under investigation; (See page 7, lines 9-20.)

- (v) analyzing the employee responses to the questionnaire; (See page 7, lines 20-24.)

- (vi) and determining the causes of disruptive factors of the installation based on the questionnaire analysis. (See again page 7, lines 20-24.)

According to **independent claim 32**, and with reference to Fig. 2, a device 20 for determining the causes of disruptive factors in an installation 15 includes

(i) a first database 21 that contains data about causes of malfunctions in a plurality of installations 40a, 40b, 40c and improvement measure data; (See page 4, lines 32-34, page 5 lines 1 - 18 and page 6, lines 26-30. See also page 12, lines 5-7 and Fig. 4.)

(ii) a second database 22 that contains data specific to the installation 15 under investigation; (See page 5, lines 3 - 6 and page 6, lines 32-33.)

(iii) an output mechanism 24 to output a questionnaire 26; (See page 7, lines 4-7.)

(iv) an input mechanism 25 to input responses of employees 29 working in the installation 15 to the questions in the questionnaire 26 and to input the data about the installation under investigation; (See page 5, lines 3-6, and page 7, lines 19-24.)

(v) and a data processing unit 23 to generate the questionnaire 26 from the data in the first database 21 and the second database 22 (See page 7, lines 4-7) and to determine the causes of disruptive factors of the installation 15 under investigation by analyzing the responses of the employees to the questions in the questionnaire (See page 7, lines 19-24) wherein:

causation data is assigned to target groups (e.g., 53 - 55) of the installation 15 (See page 8, lines and installation elements (See page 8, lines 5-24 and Fig. 3),

and data about the installation 15 to be assessed contains data about the target groups (e.g., 53 - 55) to be questioned (See page 8, lines 26-29 and Fig. 3),

the questionnaire 26 being generated such that it contains questions for employees 29 in the target groups (e.g., 53 - 55) to be questioned (See page 8, lines 17-24.).

#### 6. GROUNDS OF REJECTION TO BE REVIEWED UPON APPEAL - 37 CFR 41.37(c)(1)(vi)

All of the claims 19-38 have been rejected under 35 U.S.C. Section 102 as being anticipated by U.S. 6,909,990 (Okazaki).

7. ARGUMENT 37 CFR 41.37(c)(1)(vii)

Overview of Argument

In the following argument, it is demonstrated that each of the rejections under section 102 is deficient. Ignoring certain requirements set forth in the claims, the rejection extrapolates beyond the plain disclosure of Okazaki in a failed effort to create the claimed subject matter. As explained in the argument which follows, the rejection fails to identify every term in each independent claim 19 or 32 and any of the claims which depend therefrom.

To facilitate understanding of the differences between each of the independent claims 19 and 32 and the Okazaki reference, Section 7A includes a brief discussion concerning misapplication of the Okazaki reference.

Patentability of Each Claim is to be Separately Considered

Appellant urges that patentability of each claim should be separately considered. All of the claims are separately argued. General argument, based on deficiencies in the rejection of independent claims 19 and 32 under Section 102 demonstrates patentability of all dependent claims. However, none of the rejected claims stand or fall together because each dependent claim further defines a unique combination that patentably distinguishes over the art of record. For this reason, the Board is requested to consider each argument presented with regard to each dependent claim. Argument demonstrating patentability of each dependent claim is presented under subheadings identifying each claim by number.

7A. APPELLANTS TRAVERSE ALL REJECTIONS BASED ON THE OKAZAKI REFERENCE. PATENTABILITY OF EACH CLAIM SHOULD BE SEPARATELY CONSIDERED.

7A(1) REJECTION OF THE INDEPENDENT CLAIMS 19 AND 32 UNDER SECTION 102 BASED ON THE OKAZAKI REFERENCE IS IN ERROR.

BRIEF DISCUSSION OF THE OKAZAKI REFERENCE

As described at col. 1, lines 24 - col. 2, line 4, Figure 7 of the Okazaki reference describes a conventional plant diagnosis system including a diagnosis computer 3 and a plant

data-collecting and data-processing computer 8. With reference to Fig. 1, Okazaki further discloses collection and processing of data relating to plant state variables "for transfer to the diagnoser's unit 13." See col. 6, lines 2-6. As noted by the Examiner, the reference also describes, at col. 8, lines 27-67, a questionnaire. The questionnaire "is prepared in advance for each piece of plant machinery ... so as to include about 10 check items 45." Col. 8, lines 27-30. Such advance preparation of a questionnaire implies that Okazaki does not make use of "data relating to plant state variables" to create the questionnaire. No disclosure to the contrary has been found in the reference. By all appearances, a primary diagnosis is made in the reference on the basis of answers provided to a standard questionnaire for a specific piece of machinery. See col. 9, lines 27-34. As described below the claimed subject matter is different from what is described in Okazaki.

#### GENERAL BASIS TO OVERTURN ALL REJECTIONS UNDER SECTION 102

In order to sustain the rejection of independent claims 19 and 32 under Section 102 it is necessary to clearly identify the particular part of the reference relied upon. As stated in 37 CFR 1.104(c)(2), when a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part of the reference relied upon must be designated as nearly as practical. The Okazaki reference discloses multiple features which require individual analysis to confirm whether every element in each claim is present. Unfortunately the rejection does not map each feature in the claims to the prior art. More is required.

The Okazaki reference does not contain requisite disclosure to sustain an art rejection under Section 102 or under Section 103. That is, the requisite "elements" are missing from the prior art. It is not possible to find an embodiment in the reference which discloses all of the features claimed in even one of the independent claims 19 or 32. The rejection merely provides an assembly of passages while glossing over features of the claim elements without acknowledging that such features are not present.

7A(1)i REJECTION OF INDEPENDENT CLAIM 19 UNDER SECTION 102 BASED ON THE OKAZAKI REFERENCE IS IN ERROR.

Application of the Okazaki reference under Section 102 results in several deficiencies that render the rejection of claim 19 incorrect. By way of example, page 3 of the Final Office Action cites Fig. 7 and col. 5, line 62 - col. 6, line 6 for disclosing the method step of claim 19

"gathering and storing in a first database relevant causation data of performance limits for a plurality of related installations ..."

while Okazaki discloses nothing about a database containing relevant causation data of performance limits for a plurality of related installations. In this regard, and in response to Appellants' request for reconsideration, statements in the Advisory Action refer to Okazaki's Fig. 6 and insist that this subject matter is present. However, no showing is made and no showing can be made. Appellants do not understand why the Examiner should believe that this subject matter is present when the reference does not at all disclose collection of causation data from a plurality of plants and does not indicate any use for such information. It is only the Appellants who teach "generating a questionnaire from the causation data ..."

Numerous other deficiencies exist in the rejection of claim 19. for example, Okazaki does not disclose

"tailoring the questionnaire based on data in the second database so that the questionnaire only contains questions relating to the installation under investigation"

and, in fact, when referencing the questionnaire of Okazaki, the rejection ignored this feature as though Appellant's invention is merely a questionnaire. To sustain the rejection all features of claim 19 must be found in the prior art.

Not all questionnaires are created in the same manner and Appellants have expressly claimed a method in which a questionnaire is created based on certain data. It is plain error to ignore this feature in order the above-quoted feature to contrive a Section 102 rejection.

Furthermore, there is no prior art which would render the claimed method obvious. Appellants have done the work which should have been completed by the Examiner before



imposing the final rejection. The rejection under Section 102 is in error and there is no basis to reject claim 19 under Section 102 or under Section 103. It is therefore requested that the rejection of claim 19 be withdrawn. The claim should be allowed.

7A(1)ii REJECTION OF INDEPENDENT CLAIM 32 UNDER SECTION 102 BASED ON THE OKAZAKI REFERENCE IS ALSO IN ERROR.

This rejection of claim 32 is premised on substantially the same basis as the rejection of claim 19. The device of claim 32 is for determining the causes of disruptive factors in an installation. It differs from anything taught or suggested by the prior art. As one example, claim 32 requires "a first database that contains data about causes of malfunctions in a plurality of installations and improvement measure data ..." As already noted, the Okazaki reference is deficient in this regard. There is no disclosure of this subject matter and the Examiner's repeated citation of passages (e.g., col. 5, line 62 - col. 6, line 6) is simply unsatisfactory.

Further, having noted the absence of Appellants' first database relating to a plurality of installations, none of the prior art teaches or suggests

"a data processing unit to generate the questionnaire from the data in the first database **and** the second database and to determine the causes of disruptive factors of the installation under investigation by analyzing the responses of the employees to the questions in the questionnaire ... [Emphasis Added]"

Further distinctions exist. For example, Appellants require that

"causation data is assigned to target groups of the installation and installation elements"

while the prior art does not even disclose use of any causation data. The rejection of claim 32 under Section 102 is in error and there would be no basis to reject claim 32 under Section 103. It is therefore requested that the rejection of claim 32 under Section 102 be withdrawn and the claim should be allowed.

7A(2) THE REJECTION OF CLAIMS 20 - 31 and 33-38, WHICH EACH DEPEND FROM CLAIM 19 OR CLAIM 32, BASED ON THE OKAZAKI REFERENCE IS IN ERROR.

Each of the claims depending from claims 19 and 32 and rejected under section 102 defines distinct and non-obvious subject matter and further distinguishes the invention over the prior art.

#### CLAIM 21 FURTHER DISTINGUISHES OVER THE ART OF RECORD

Claim 21 has been rejected on the exact same basis as claim 19 as though it does not further define any subject matter. In fact, the method of claim 21 requires that a data processing unit is used to generate the questionnaire. As previously established, the Okazaki reference discloses a questionnaire "prepared in advance" (see col. 8, lines 28-30) and it is not seen how the prior art would use a data processing unit if there already exists a questionnaire for each piece of machinery. The features of claim 21 further distinguish over the prior art and therefore provide another novel combination.

#### CLAIM 20 FURTHER DISTINGUISHES OVER THE ART OF RECORD

Claim 20, which depends from claim 19 further distinguishes over the Okazaki reference, requiring, among other features, that "the disruptive factors are selected from the group consisting of malfunctions and performance limits." The Okazaki reference makes no disclosure of this combination.

#### CLAIM 22 FURTHER DISTINGUISHES OVER THE ART OF RECORD

The method of claim 22 further distinguishes over the prior art by requiring that improvement measure data is stored in the first database. The Okazaki reference does not suggest this feature or the claimed combination. Allowance is requested.

#### CLAIM 23 FURTHER DISTINGUISHES OVER THE ART OF RECORD

The method of claim 23 includes additional subject matter not found in the prior art, i.e., "assigning the relevant causation data to an installation element ... " In the absence of disclosure relating to causation data it is not seen how this rejection could stand.

CLAIM 24 FURTHER DISTINGUISHES OVER THE ART OF RECORD

The method of claim 24 further requires "assigning the causation data to target groups of the installation ... and in the absence of disclosure relating to causation data it is not seen how this rejection could stand.

CLAIM 25 FURTHER DISTINGUISHES OVER THE ART OF RECORD

Claim 25 is a method wherein "the questionnaire is directed to drive or automation components of the installation." The claimed combination is not taught or suggested by the prior art.

CLAIM 26 FURTHER DISTINGUISHES OVER THE ART OF RECORD

In the method of claim 26 "the responses of the employees are collected via interviews." This method is not disclosed in the prior art.

CLAIM 27 FURTHER DISTINGUISHES OVER THE ART OF RECORD

According to claim 27 "the responses of the employees are collected via a data network." This combination of features is not taught or suggested by anyone but the Appellants.

CLAIM 28 FURTHER DISTINGUISHES OVER THE ART OF RECORD

Claim 28 further distinguishes by requiring that "the relevant causation data is obtained from malfunction or field reports from other installations." No such disclosure is found in the prior art.

CLAIM 29 FURTHER DISTINGUISHES OVER THE ART OF RECORD

The method of claim 29 is implemented by a technical service provider. The claimed combination is distinct and non-obvious over the prior art.

CLAIM 30 FURTHER DISTINGUISHES OVER THE ART OF RECORD

The method of claim 30 includes an assessment of the technical state of the installation that is made based on the responses of the employees and with a defined assessment rule. This combination further distinguishes over the prior art.

CLAIM 31 FURTHER DISTINGUISHES OVER THE ART OF RECORD

According to claim 31 "the questionnaire only contains ... questions for employees in the target groups to be questioned." The prior art does not disclose Appellants' method of questioning target groups.

CLAIM 33 FURTHER DISTINGUISHES OVER THE ART OF RECORD

In the device of claim 33 "the disruptive factors are selected from the group consisting of malfunctions and performance limits." This combination is absent from the prior art.

CLAIM 34 FURTHER DISTINGUISHES OVER THE ART OF RECORD

In the device of claim 34 "the first data base further contains data about causes of performance limits." Only the Appellants teach this subject matter.

CLAIM 35 FURTHER DISTINGUISHES OVER THE ART OF RECORD

According to claim 35, "the data in the second database contains details about the installation elements in the installation under investigation, and the questionnaire contains questions for installation elements occurring in the installation." The prior art does not suggest this combination.

CLAIM 36 FURTHER DISTINGUISHES OVER THE ART OF RECORD

The device of claim 36 requires that the output unit and the input unit are connected to a data communication network that is accessible by the employees. This combination further distinguishes over the prior art.

CLAIM 37 FURTHER DISTINGUISHES OVER THE ART OF RECORD

The device as claimed in claim 37 includes having the first database "connected to a plurality of installations via a data network." This combination of features is not in the prior art.

CLAIM 38 FURTHER DISTINGUISHES OVER THE ART OF RECORD

According to claim 38, the questionnaire being generated "only contains questions for employees in the target groups to be questioned." The combination is not found in the Okazaki reference.

7F. CONCLUSIONS

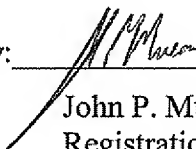
Argument has been presented to demonstrate that the rejections under Section 102 are deficient and that the dependent claims further distinguish over the prior art. The Examiner has argued rejections under Section 102 when claimed features are absent from the references. Accordingly, there cannot be a rejection under Section 102. For all of the above argued reasons, all of the rejections should be overturned and the claims should be allowed.

8. APPENDICES

An appendix containing a copy of the claims involved in this appeal is provided herewith. No evidence appendix or related proceedings appendix is provided because no such evidence or related proceeding is applicable to this appeal.

Respectfully submitted,

Dated: 5/7/18

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## 9. APPENDIX OF CLAIMS ON APPEAL

19. A method for determining causes of disruptive factors in an installation under investigation, comprising:

gathering and storing in a first database relevant causation data of performance limits for a plurality of related installations;

storing data relating to the installation under investigation in a second database;

generating a questionnaire from the causation data by tailoring the questionnaire based on data in the second database so that the questionnaire only contains questions relating to the installation under investigation;

collecting responses to the questionnaire questions from employees of the installation under investigation;

analyzing the employee responses to the questionnaire; and

determining the causes of disruptive factors of the installation based on the questionnaire analysis.

20. The device as claimed in claim 19, wherein the disruptive factors are selected from the group consisting of malfunctions and performance limits.

21. The method as claimed in claim 20, further comprising:

generating the questionnaire by a data processing unit that uses data in the first and second databases,

outputting the questionnaire by an output unit,

collecting the employee responses via an input unit,

storing the employee responses in the second database, and

determining the causes of malfunctions and performance limits by the data processing unit based on the stored responses of the employees.

22. The method as claimed in claim 21, wherein improvement measure data is stored in the first database.

23. The method as claimed in claim 22, further comprises:

assigning the relevant causation data to an installation element, wherein the data in the second database contains data about installation elements occurring in the installation under investigation, and

the questionnaire contains questions for installation elements occurring within the installation.

24. The method as claimed in claim 23, further comprising:

assigning the causation data to target groups of the installation,

generating the questionnaire such that the questionnaire contains questions for employees in the target groups to be questioned, wherein the installation under investigation data contains details about the target groups to be questioned.

25. The method as claimed in claim 24, wherein the questionnaire is directed to drive or automation components of the installation.

26. The method as claimed in claim 25, wherein the responses of the employees are collected via interviews.

27. The method as claimed in claim 26, wherein the responses of the employees are collected via a data network.

28. The method as claimed in claim 27, wherein the relevant causation data is obtained from malfunction or field reports from other installations.

29. The method as claimed in claim 28, wherein the method is implemented by a technical service provider.

30. The method as claimed in claim 29, wherein an assessment of the technical state of the installation is made based on the responses of the employees and with a defined assessment rule.

31. The method as claimed in claim 30, wherein the questionnaire only contains questions for installation elements occurring in the installation and the questionnaire is generated such that it only contains questions for employees in the target groups to be questioned.

32. A device for determining the causes of disruptive factors in an installation, comprising:

- a first database that contains data about causes of malfunctions in a plurality of installations and improvement measure data;
- a second database that contains data specific to the installation under investigation;
- an output mechanism to output a questionnaire;
- an input mechanism to input responses of employees working in the installation to the questions in the questionnaire and to input the data about the installation under investigation; and
- a data processing unit to generate the questionnaire from the data in the first database and the second database and to determine the causes of disruptive factors of the installation under investigation by analyzing the responses of the employees to the questions in the questionnaire wherein:

causation data is assigned to target groups of the installation and installation elements, data about the installation to be assessed contains data about the target groups to be questioned, the questionnaire being generated such that it contains questions for employees in the target groups to be questioned.

33. The device as claimed in claim 32, wherein the disruptive factors are selected from the group consisting of malfunctions and performance limits.

34. The device as claimed in claim 33, wherein the first data base further contains data about causes of performance limits.



35. The device as claimed in claim 34, further wherein:  
the data in the second database contains details about the installation elements in the installation under investigation, and  
the questionnaire contains questions for installation elements occurring in the installation.
36. The device as claimed in claim 35, wherein the output unit and the input unit are connected to a data communication network that is accessible by the employees.
37. The device as claimed in claim 36, wherein the first database is connected to a plurality of installations via a data network.
38. The device as claimed in claim 37, wherein the questionnaire being generated only contains questions for employees in the target groups to be questioned.

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10. EVIDENCE APPENDIX - 37 CFR 41.37(c) (1) (ix)

None

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Atty. Doc. No. 2003P14790WOUS

11. RELATED PROCEEDINGS APPENDIX - 37 CFR 41.37(c) (1) (x)

None